

**EXHIBIT 1**

**FILED UNDER SEAL**

1 CLEMENT SETH ROBERTS (STATE BAR NO. 209203)  
2 croberts@orrick.com  
3 BAS DE BLANK (STATE BAR NO. 191487)  
4 basdeblank@orrick.com  
5 ALYSSA CARIDIS (STATE BAR NO. 260103)  
6 acaridis@orrick.com  
7 EVAN D. BREWER (STATE BAR NO. 304411)  
8 ebrewer@orrick.com  
9 ORRICK, HERRINGTON & SUTCLIFFE LLP  
10 The Orrick Building  
11 405 Howard Street  
12 San Francisco, CA 94105-2669  
13 Telephone: +1 415 773 5700  
14 Facsimile: +1 415 773 5759

15 SEAN M. SULLIVAN (*pro hac vice*)  
16 sullivan@ls3ip.com  
17 COLE RICHTER (*pro hac vice*)  
18 richter@ls3ip.com  
19 LEE SULLIVAN SHEA & SMITH LLP  
20 656 W Randolph St., Floor 5W  
21 Chicago, IL 60661  
22 Telephone: +1 312 754 0002  
23 Facsimile: +1 312 754 0003

24 *Attorneys for Defendant Sonos, Inc.*

25  
26 UNITED STATES DISTRICT COURT  
27  
28 NORTHERN DISTRICT OF CALIFORNIA  
29  
30 SAN FRANCISCO DIVISION

31 GOOGLE LLC,  
32 Plaintiff and Counter-defendant,  
33 v.  
34 SONOS, INC.,  
35 Defendant and Counter-claimant.

36 Case No. 3:20-cv-06754-WHA  
37 Related to Case No. 3:21-cv-07559-WHA

38  
39 **OPENING EXPERT REPORT OF**  
40 **DR. KEVIN C. ALMEROOTH**

41  
42  
43  
44  
45  
46  
47  
48

1        86. I understand that contributory infringement occurs when a party provides a material  
2 part or a component to another for use in a product, machine, or process that infringes at least one  
3 claim of an asserted patent, and that party (i) had knowledge of the asserted patent, (ii) sold or  
4 provided a component that is a material component of the claimed invention that is used in a  
5 manner that infringes the patent, (iii) knew that the part/component was especially made for use  
6 in a manner that infringes the patent claim; and (iv) the component is not a staple article of  
7 commerce suitable for substantial non-infringing use.

8        87. I understand that a staple article of commerce suitable for substantial non-infringing  
9 use is something that has uses other than as a component of the infringing product or patented  
10 method. A substantial non-infringing use is one that is not occasional, farfetched, impractical,  
11 experimental, or hypothetical. Further, in determining whether a use is substantial, one can  
12 consider the use's practicality, the component's intended purpose, and the component's intended  
13 market. In determining whether or not the component is a staple article of commerce suitable for  
14 non-infringing use, the focus is on whether the component itself, not the product in which the  
15 component is embedded, is or is not suitable for substantial non-infringing use. Whether the  
16 product in which the component is embedded is or is not suitable for substantial infringing use is  
17 not relevant.

18            **C. Acceptable Non-Infringing Alternatives**

19        88. I understand that the existence or absence of available, acceptable, non-infringing  
20 alternatives to the products accused of infringement can be relevant to determining damages in a  
21 patent infringement suit. I understand that in order to qualify for consideration in the damages  
22 analysis, any proposed alternative must be (i) "non-infringing," (ii) "available," and (iii)  
23 "acceptable".

24        89. I understand that "non-infringing" in this context means that the proposed  
25 alternative to the accused product must fail to meet at least one limitation of each of the asserted  
26 claims of a patent under the standards of infringement described above.

27        90. I understand that "available" in this context means that the proposed alternative was  
28 available to the accused infringer during the period of infringement for which the patent holder

1 claims damages. In this respect, I understand that when a proposed alternative was not on the  
2 market during the period of infringement, a court may reasonably infer that it was not available as  
3 a non-infringing alternative at that time, and the accused infringer then has the burden to overcome  
4 this inference by showing that, despite not being on the market, the proposed alternative was still  
5 available to the accused infringer during the period of infringement.

6 91. I understand that multiple considerations are relevant to whether a proposed  
7 alternative was sufficiently “available” to the accused infringer during the period of infringement,  
8 including non-exhaustive examples such as: (a) whether the alleged infringer possessed the  
9 necessary equipment, know-how, and experience to implement the alleged alternative at the time  
10 of infringement; (b) the time and/or cost that would be required to develop and/or implement the  
11 alleged alternative; (c) whether the effects of changing from the infringing product to an alleged  
12 non-infringing alternative were well known or readily available at the time of infringement; and  
13 (d) whether the necessary materials or other resources required to implement the alternative were  
14 available at the time of infringement, including whether the required materials or other resources  
15 were available in bulk or commercially necessary quantity.

16 92. I understand that a proposed alternative that is only theoretically possible to  
17 implement during the period of infringement is not considered an “available” alternative. I  
18 understand that the accused infringer must have had the capability to develop the proposed  
19 alternative for its use during the period of infringement.

20 93. Further, I understand if the patentee has one or more other patents outside of the  
21 immediate lawsuit that are still infringed by a proposed alternative, then the proposed alternative  
22 would not have been “available” to the accused infringer during the period of infringement.

23 94. I understand that “acceptable” in this context means that a proposed alternative was  
24 a commercially acceptable (or adequate) substitute in the marketplace for the accused product at  
25 the date of first infringement. I understand that there are multiple considerations that are relevant  
26 to this inquiry of whether a proposed alternative was “acceptable,” including non-exhaustive  
27 examples such as: (a) the realities of the marketplace; (b) whether the accused infringer selected  
28 the accused infringing product rather than the alleged available, acceptable alternative; (c) whether

1 the alleged acceptable non-infringing substitute has a higher price or cost; (d) whether the alleged  
2 acceptable non-infringing substitute possesses characteristics significantly different from the  
3 patented product; (e) the maturity of the proposed alternative technology (f) whether purchasers  
4 are motivated to purchase because of particular infringing features of a product that are not  
5 available in the alleged non-infringing substitute; and (g) the cost and/or difficulty of implementing  
6 the alleged substitute.

7 95. I also understand that the mere existence of a competing device in the marketplace  
8 does not necessarily make that device an acceptable substitute. Rather, to be deemed an acceptable  
9 alternative, a product on the market must have the advantages of the patented product and the same  
10 level of performance such that the demand of consumers would be satisfied by the alternative.

11 **VII. LEVEL OF ORDINARY SKILL IN THE ART**

12 96. In my opinion, a POSITA for purposes of this action is a person having the  
13 equivalent of a four-year degree from an accredited institution (typically denoted as a B.S. degree)  
14 in computer science, computer engineering, electrical engineering, or an equivalent thereof, and  
15 approximately 2-4 years of professional experience in the fields of networking and network-based  
16 systems or applications, such as consumer audio systems, or an equivalent level of skill,  
17 knowledge, and experience. Based on my personal knowledge and extensive experience in the  
18 fields of networking and multimedia systems, including the configuration and control of networked  
19 devices, I am very familiar with the level of knowledge and abilities of a POSITA at the time of  
20 the inventions.

21 97. In forming my opinions set forth herein, I applied this level of ordinary skill in the  
22 art.

23 98. I understand that Google's expert, Dr. Dan Schonfeld, has proposed the following  
24 level of ordinary skill in the art in this case:

25 [A] person of ordinary skill in the art of the '885 patent would have at least (a) a  
26 bachelor's degree in computer science, computer engineering, electrical  
27 engineering, or an equivalent thereof, and (b) at least 2-4 years of professional  
28 experience in the field of multimedia playback systems, such as consumer audio  
systems, or an equivalent level of skill, knowledge, and experience. Moreover,  
additional education could substitute for work experience and significant work

1 the Accused Google Player and to continue to listen to that same audio on the Accused Google  
2 Player after setting up one or more speaker groups that include the Accused Google Player, and to  
3 do so without initiating synchronous audio playback on another Accused Google Player in the  
4 user's home since at least as early as December 2015. *See, e.g.*, SONOS-SVG2-00040246-49;  
5 5/10/2022 K. MacKay Dep. Tr. at 260:21-263:20 (testifying that Google began developing its  
6 "static" speaker group functionality in "March of 2015" and that "one advantage might be that the  
7 group is available as a Cast target separately from the individual devices" in the group). Thus, at  
8 the time Google would have allegedly implemented its second purported non-infringing alternative  
9 some four to five years later in November 2019 and/or November 2020 (when the '966 Patent and  
10 '885 Patent issued, respectively), Google's customers would have been accustomed to being able  
11 to create and save a new speaker group without interrupting active playback on an Accused Google  
12 Player in the new speaker group and without initiating synchronous audio playback on another  
13 Accused Google Player in the user's home. In my opinion, this further confirms that Google's  
14 second purported non-infringing alternative would not have been commercially acceptable.

15 762. Further yet, during a discussion with Mr. Nick Millington, who is Sonos's Chief  
16 Innovation Officer, I asked Mr. Millington for his thoughts regarding a hypothetical change to the  
17 design of Sonos's "saved groups" feature whereby the act of creating a new saved group would  
18 cause the new saved group to be invoked automatically. In response, Mr. Millington indicated that  
19 he did not believe Sonos's customers would consider this to be an acceptable change to Sonos's  
20 "saved groups" feature due to the loss of control and disruption of a user's listening experience –  
21 particularly in the example scenarios summarized above.

22 **C. Non-Infringing Alternative #3**

23 **1. Overview of Non-Infringing Alternative #3**

24 763. As set forth in Google's First Supplemental Response to Interrogatory No. 18,  
25 Google refers to its third purported non-infringing alternative as "no overlapping groups" and  
26 asserts that this "non-infringing alternative is an implementation in which a speaker that is already  
27 a member of one group will be forced out of this (first) group when a user attempts to add the  
28 speaker to a new (second) group" and "with this non-infringing alternative, no speaker can be a

1 member of more than one group at the same time,” as required by Asserted Claim 1 of the ’885  
2 Patent and each of the Asserted Claims of the ’996 Patent. *See* Google’s Eighth Suppl. Resp. to  
3 Sonos’s First Set of Interrogatories at 10.

4 764. As an initial matter, I note that Google has not provided sufficient details regarding  
5 this third purported non-infringing alternative and, as a result, I do not have enough information  
6 to fully evaluate whether this alleged “alternative” would be non-infringing, technologically  
7 viable, available to Google, or commercially acceptable. Nevertheless, I made my best effort to  
8 address this third purported non-infringing alternative based on my current understanding of the  
9 limited information provided by Google. I expressly reserve the right to supplement my opinion  
10 regarding this third purported non-infringing alternative if Google later attempts to provide further  
11 details.

12 765. As best as I am able to understand it, Google’s third purported non-infringing  
13 alternative would involve redesigning an Accused Google Player’s firmware such that the Accused  
14 Google Player could only ever be a member of a single “speaker group” at any given time, namely,  
15 the most recently created “speaker group.” However, unlike Google’s “dynamic” group  
16 functionality, my understanding is that the most recently created “speaker group” would still be a  
17 grouping of Accused Google Players for synchronous playback that is predefined by a user and  
18 saved for future use such that the “speaker group” is available to be launched at a later time (i.e.,  
19 after creation) at the user’s request. In other words, the most recently created “speaker group”  
20 would still be a “zone scene” as claimed in the ’885 Patent and ’966 Patents.

21 766. Lastly, Google also has not established that this second purported non-infringing  
22 alternative, which was not on the market during the timeframe of infringement, would have been  
23 available to Google – particularly in view of the fact that Sonos has many other patents directed to  
24 technology for grouping “zone players” together for synchronous playback.

25 **2. Non-Infringing Alternative #3 is Not Commercially Acceptable**

26 767. Based on my understanding of Google’s third purported non-infringing alternative,  
27 it is my opinion that this purported alternative is not commercially acceptable because it would  
28 significantly degrade the user experience of Google’s “speaker groups” technology by only

1 allowing a given Accused Google Player to be a member of a single “speaker group” at any given  
2 time (i.e., a given Accused Google Player could not be a member of multiple “speaker groups”  
3 that are in existence at the same time). In my opinion, this is not commercially acceptable.

4 768. For example, in my opinion, one of the primary reasons for providing a networked  
5 media playback system with functionality that enables a user to create and save “zone scenes” of  
6 playback devices (e.g., smart speakers) that are stored for future use is to allow a user to create and  
7 save multiple “zone scenes” of playback devices that have one or more overlapping playback  
8 devices such that any one of the “zone scenes” is available for synchronous playback when a user  
9 desires. Take, for instance, a user of a Google networked media playback system who wishes to  
10 listen to synchronous audio on different Google “speaker groups” in his or her home at different  
11 times (e.g., morning, afternoon, evening, and weekend, etc.), where certain “speaker groups”  
12 include one or more overlapping Accused Google Players. Using Google’s current Cast  
13 technology that incorporates the claimed technology of the ’885 and ’966 Patents, the user can  
14 easily achieve the above-described listening preferences by using the Google Home app installed  
15 on an Accused Google Controller to create and save a “speaker group” for each of the different  
16 times and then later launch each previously-created and saved “speaker group” at its desired time  
17 by selecting the “speaker group” via, for example, the Google Home app, Google’s YouTube  
18 Music app, or the Spotify app.

19 769. In contrast, the user in this example could not achieve the above-described listening  
20 preferences if Google’s third purported non-infringing alternative were implemented. Instead, a  
21 user would have to set up whatever “speaker group” the user wished to launch first (“the first  
22 speaker group”) and then, at the time the user wishes to listen to synchronous audio on a different  
23 overlapping “speaker group” (“the second speaker group”), or prior to the time the user wishes to  
24 listen to synchronous audio on the second “speaker group” but after the user is done listening to  
25 synchronous audio on the first speaker group, the user would have to set up the second speaker  
26 group.

27 770. Moreover, once the user sets up the second speaker group, the first speaker group  
28 would be destroyed as the one or more overlapping Accused Google Players would no longer be

1 members of the first speaker group because, according to Google, the overlapping Accused Google  
2 Players would have been “forced out” of the first speaker group. Thus, if the user wishes to later  
3 listen to synchronous audio on the first speaker group again, then the user would have to re-create  
4 the first speaker group. The above described example illustrates how Google’s third purported  
5 non-infringing alternative would be time consuming and frustrating to a user. Such a degradation  
6 to a user’s listening experience would not be commercially acceptable.

7 771. Further, the operation of Google’s third purported non-infringing alternative would  
8 also be confusing and frustrating for a user who mistakenly believes that because he or she has the  
9 ability to set up multiple “speaker groups” for future use, he or she can set up multiple “speaker  
10 groups” having one or more overlapping Accused Google Players. Such a user may proactively  
11 attempt to set up multiple “speaker groups” having one or more overlapping Accused Google  
12 Players only to find out later, when the user attempts to launch one of the “speaker groups” that is  
13 not the most recently created “speaker group,” that all of the “speaker groups” that the user  
14 attempted to set up other than the most recently created “speaker group” were destroyed and no  
15 longer exist. This further confirms that Google’s third purported non-infringing alternative would  
16 not be commercially acceptable.

17 772. Notably, a Google product manager, Tomer Shekel, confirmed that Google’s third  
18 purported non-infringing alternative would not be commercially acceptable in this regard.  
19 Specifically, Mr. Shekel testified that that not having the ability to have multiple different speaker  
20 groups with an overlapping Accused Google Player would be a “poor user experience.” *See*  
21 11/23/2022 T. Shekel Dep. Tr. at 109:12-19 (Q ... would it be a poor user experience to limit  
22 speakers to just one group? ... A in the Google Cast approach if we have option that every speaker  
23 can only be part of one group I would think it’s a poor user experience, yes.”); *see also id.* at 99:21-  
24 100:5 (Q: “Would it be a poor user experience to kick speakers out of a prior group if [] they’re  
25 added to a new group?” A: “[T]hat would not be a good experience for how Google Cast works  
26 ....”). Similarly, when Mr. Shekel confirmed that Google’s third purported non-infringing  
27 alternative would not be commercially acceptable when corresponding with potential Cast partner  
28 LG Electronics. Specifically, with reference to the ability to have multiple different speaker groups

1 with an overlapping Accused Google Player, Mr. Shekel stated that “obviously [Google] wouldn’t  
2 want the user to be prevented from this scenario, especially since it is fully supported.” *See*  
3 GOOG-SONOS-NDCA-00114286-301 at 286.

4 773. As another example, take, for instance, a user who is enjoying and wants to  
5 continue listening to synchronous audio on a first “speaker group” that has previously been  
6 launched at the time the user decides to set up a second “speaker group” for use at some later time,  
7 where the second “speaker group” includes one or more of the Accused Google Players in the first  
8 “speaker group.” Although not clear from Google’s limited description of its third purported non-  
9 infringing alternative, in this example, it appears that upon setting up the second “speaker group”  
10 either (i) the one or more overlapping Accused Google Players would stop playing the audio they  
11 were playing in accordance with the first “speaker group” and the remaining Accused Google  
12 Speakers in the first “speaker group” would continue playing the audio they were playing in  
13 accordance with the first “speaker group” or (ii) all of the Accused Google Speakers in the first  
14 “speaker group” would stop playing audio. In my opinion, neither of these results is commercially  
15 acceptable because they each result in one or more of the Accused Google Speakers in the first  
16 “speaker group” stopping playback despite the fact that the user wanted to continue listing to  
17 synchronous audio on the first “speaker group.”

18 774. Notably, Mr. Shekel also confirmed that Google’s third purported non-infringing  
19 alternative would not be commercially acceptable in this regard as well. Specifically, Mr. Shekel  
20 testified that “if by setting a group you’ll now be stopping the music a person played [on an  
21 Accused Google Player then] that would *not be a great experience* for that user.” *See* 11/23/2022  
22 T. Shekel Dep. Tr. at 99:9-16 (Q: “Would you say that it’s an important feature for the music  
23 playback [on Accused Google Players] to not be disturbed while you set up new groups?” A: In  
24 my opinion, if by setting a group you’ll now be stopping the music a person played that would not  
25 be a great experience for that user.”).

26 775. Further, I understand that Google has been providing users with the ability to listen  
27 to synchronous audio on a first “speaker group” that has previously been launched at the time the  
28 user decides to create and save a second “speaker group” that includes one or more of the Accused

1 Google Players in the first “speaker group,” and to continue listening to the synchronous audio on  
2 the first “speaker group” after the second “speaker group” has been created and saved since at least  
3 as early as December 2015. *See, e.g.*, SONOS-SVG2-00040246-49; 5/10/2022 K. MacKay Dep.  
4 Tr. at 260:21-263:20 (testifying that Google began developing its “static” speaker group  
5 functionality in “March of 2015”). Thus, at the time Google would have allegedly implemented  
6 its third purported non-infringing alternative some four to five years later in November 2019 and/or  
7 November 2020 (when the ’966 Patent and ’885 Patent issued, respectively), Google’s customers  
8 would have been accustomed to being able to create and save a new “speaker group” that includes  
9 one or more Accused Google Players that are already members of a previously created and  
10 launched “speaker group” without interrupting the synchronous playback on the previously created  
11 and launched “speaker group.” In my opinion, this further confirms that Google’s third purported  
12 non-infringing alternative would not have been commercially acceptable.

13 776. Further yet, during a discussion with Mr. Nick Millington, who is Sonos’s Chief  
14 Innovation Officer, I asked Mr. Millington for his thoughts regarding a hypothetical change to the  
15 design of Sonos’s “saved groups” feature whereby it would no longer be possible to have multiple  
16 saved groups that included the same Sonos player. In response, Mr. Millington indicated that he  
17 did not believe Sonos’s customers would consider this to be an acceptable change to Sonos’s  
18 “saved groups” feature for similar reasons to those summarized above. Mr. Millington also  
19 pointed out that removing the ability to have multiple saved groups that included the same Sonos  
20 player would eliminate one of the key benefits of Sonos’s “saved groups” feature relative to  
21 Sonos’s ad-hoc grouping feature that allows groups of Sonos players to be created and invoked on  
22 the fly.

23 777. Lastly, Google also has not established that this third purported non-infringing  
24 alternative, which was not on the market during the timeframe of infringement, would have been  
25 available to Google – particularly in view of the fact that Sonos has many other patents directed to  
26 technology for grouping “zone players” together for synchronous playback.

27 **XVII. SONOS’S USE OF THE PATENTED TECHNOLOGY**

28 778. I have been asked to evaluate and provide my opinions regarding whether any of

1       817. To help assist in my testimony at trial, I have prepared a number of demonstratives  
2 that are attached hereto as **Exhibit Q**. These demonstratives are exemplary and I reserve the right  
3 to create additional demonstratives and/or to modify the demonstratives in **Exhibit Q** based on the  
4 material in this report. For example, I reserve the right to create additional demonstratives and/or  
5 to modify the demonstratives in **Exhibit Q** based on the testing screenshots I included in this report  
6 as well as the evidence cited in this report. I also reserve the right to rely on the demonstratives  
7 that were attached as Exhibit H to my Opening report regarding Asserted Claim 1 of the '885  
8 Patent dated June 22, 2022.

9       818. I have also reviewed Sonos's Technology Tutorial that provides an overview of the  
10 '885 Patent, which I understand was submitted to the court in February 2022. I incorporate by  
11 reference herein Sonos's Technology Tutorial and expressly reserve the right to use the  
12 Technology Tutorial in whole or in part as a demonstrative to assist in my testimony.

13 **XX. RESERVATION OF RIGHT**

14       819. I reserve the right to further expound on my opinions set forth herein in subsequent  
15 declarations, reports, and/or at trial.

16  
17 Dated: November 30, 2022

18 By: Kevin C. Almeroth  
19 Kevin C. Almeroth

20  
21  
22  
23  
24  
25  
26  
27  
28